



June 10, 2016

Meagan E. Ormand Golder Associates Inc. 2108 W. Laburnum Ave. Suite 200 Richmond, VA 23227

RE: Project: Bremo Weekly Process Pace Project No.: 92300811

# Dear Meagan Ormand:

Enclosed are the analytical results for sample(s) received by the laboratory on June 09, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nicole Gasiorowski

Micolo Yasicronske

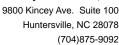
nicole.gasiorowski@pacelabs.com

**Project Manager** 

Enclosures

cc: Ron DiFrancesco, Golder Associates Inc.
Martha Smith, Golder Associates Inc.
Mike Williams, Golder Associates Inc







# **CERTIFICATIONS**

Project: Bremo Weekly Process

Pace Project No.: 92300811

**Ormond Beach Certification IDs** 

8 East Tower Circle, Ormond Beach, FL 32174 Alabama Certification #: 41320

Connecticut Certification #: 41320

Delaware Certification: FL NELAC Reciprocity

Florida Certification #: E83079 Georgia Certification #: 955

Guam Certification: FL NELAC Reciprocity Hawaii Certification: FL NELAC Reciprocity

Illinois Certification #: 200068

Indiana Certification: FL NELAC Reciprocity Kansas Certification #: E-10383

Louisiana Certification #: FL NELAC Reciprocity Louisiana Environmental Certificate #: 05007

Maryland Certification: #346 Michigan Certification #: 9911

Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236
Montana Certification #: Cert 0074

Charlotte Certification IDs 9800 Kincey Ave. Ste 100, Huntersville, NC 28078 North Carolina Drinking Water Certification #: 37706

North Carolina Field Services Certification #: 5342 North Carolina Wastewater Certification #: 12

**Asheville Certification IDs** 

2225 Riverside Drive, Asheville, NC 28804 Florida/NELAP Certification #: E87648 Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

Nebraska Certification: NE-OS-28-14

Nevada Certification: FL NELAC Reciprocity

New York Certification #: 11608

North Carolina Environmental Certificate #: 667

North Carolina Certification #: 12710 North Dakota Certification #: R-216 Oklahoma Certification #: D9947 Pennsylvania Certification #: 68-00547 Puerto Rico Certification #: FL01264 South Carolina Certification: #96042001 Tennessee Certification #: TN02974

Texas Certification: FL NELAC Reciprocity US Virgin Islands Certification: FL NELAC Reciprocity

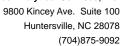
Virginia Environmental Certification #: 460165
Wyoming Certification: FL NELAC Reciprocity

West Virginia Certification #: 9962C Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

South Carolina Certification #: 99006001 Florida/NELAP Certification #: E87627 Kentucky UST Certification #: 84 Virginia/VELAP Certification #: 460221

North Carolina Wastewater Certification #: 40 South Carolina Certification #: 99030001 Virginia/VELAP Certification #: 460222





# **SAMPLE ANALYTE COUNT**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92300811001	T3-160609-0930-S3	EPA 1664B	JMS	1	PASI-C
		EPA 200.7	AIS	1	PASI-O
		Trivalent Chromium Calculation	HEA	1	PASI-O
		EPA 200.8	CKJ	10	PASI-O
		EPA 245.1	ANB	1	PASI-A
		SM 2540D	MJP	1	PASI-A
		EPA 218.7	AEM	1	PASI-O
		EPA 350.1	AES2	1	PASI-A
		SM 4500-CI-E	AES2	1	PASI-A



9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

#### **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: EPA 1664B

**Description:** HEM, Oil and Grease **Client:** Golder\_Dominion\_Bremo

**Date:** June 10, 2016

#### **General Information:**

1 sample was analyzed for EPA 1664B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

#### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

# **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

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#### **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: EPA 200.7
Description: 200.7 MET ICP

Client: Golder\_Dominion\_Bremo

**Date:** June 10, 2016

#### **General Information:**

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

#### Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

#### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Method Blank:

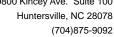
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





#### **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: Trivalent Chromium Calculation
Description: Trivalent Chromium Calculation
Client: Golder\_Dominion\_Bremo

**Date:** June 10, 2016

#### **General Information:**

1 sample was analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

# Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



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#### **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: EPA 200.8

**Description:** 200.8 MET ICPMS **Client:** Golder\_Dominion\_Bremo

**Date:** June 10, 2016

#### **General Information:**

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

#### **Sample Preparation:**

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

#### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### **Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

#### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

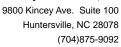
#### **Additional Comments:**

**Analyte Comments:** 

QC Batch: MPRP/30965

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 1602015)
  - Silver
  - Arsenic
  - Cadmium
  - Lead
  - Antimony
  - Selenium
  - Thallium
- MSD (Lab ID: 1602016)
  - Silver
  - Arsenic





# **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: EPA 200.8

**Description:** 200.8 MET ICPMS **Client:** Golder\_Dominion\_Bremo

**Date:** June 10, 2016

Analyte Comments:

QC Batch: MPRP/30965

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

• MSD (Lab ID: 1602016)

LeadAntimonySeleniumThallium

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#### **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: EPA 245.1 Description: 245.1 Mercury

Client: Golder\_Dominion\_Bremo

**Date:** June 10, 2016

#### **General Information:**

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

#### Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

#### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

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#### **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: SM 2540D

**Description:** 2540D TSS, Low-Level **Client:** Golder\_Dominion\_Bremo

Date: June 10, 2016

#### **General Information:**

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

#### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

#### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

#### **Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



#### **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: EPA 218.7

**Description:** Hexavalent Chromium by IC **Client:** Golder\_Dominion\_Bremo

**Date:** June 10, 2016

#### **General Information:**

1 sample was analyzed for EPA 218.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

# Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

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**PROJECT NARRATIVE** 

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: EPA 350.1

Description: 350.1 Ammonia

Client: Golder\_Dominion\_Bremo

**Date:** June 10, 2016

#### **General Information:**

1 sample was analyzed for EPA 350.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Method Blank:

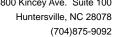
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

# Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





#### **PROJECT NARRATIVE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Method: SM 4500-CI-E Description: 4500 Chloride

Client: Golder\_Dominion\_Bremo

**Date:** June 10, 2016

#### **General Information:**

1 sample was analyzed for SM 4500-CI-E. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

#### **Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

# Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

#### **Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

#### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

#### **Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

# Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

#### **Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.



# **ANALYTICAL RESULTS**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Date: 06/10/2016 05:55 PM

Sample: T3-160609-0930-S3	Lab ID: 923	00811001	6/09/16 15:40 I	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
Field Data	Analytical Met	hod:						
Collected By Collected Date Collected Time Field pH	M. Ormand 6/9/16 9:30 8.1	Std. Units	0.10	1 1 1		06/09/16 09:40 06/09/16 09:40 06/09/16 09:40 06/09/16 09:40	)	
HEM, Oil and Grease	Analytical Met	hod: EPA 16	64B					
Oil and Grease	ND	mg/L	5.0	1		06/10/16 08:29	)	
200.7 MET ICP	Analytical Met	hod: EPA 200	0.7 Preparation Me	thod: EP	A 200.7			
Tot Hardness asCaCO3 (SM 2340B	74200	ug/L	3300	1	06/10/16 11:20	06/10/16 15:18	<b>;</b>	
Frivalent Chromium Calculation	Analytical Met	hod: Trivalen	t Chromium Calcula	ation				
Chromium, Trivalent	ND	ug/L	5.0	1		06/10/16 17:14	16065-83-1	
200.8 MET ICPMS	Analytical Met	hod: EPA 200	0.8 Preparation Me	thod: EP	A 200.8			
Antimony Arsenic Cadmium Copper Lead Nickel Selenium Silver	5.2 66.9 ND ND ND ND ND ND	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	5.0 5.0 1.0 5.0 5.0 5.0 5.0 0.40	1 1 1 1 1 1 1	06/10/16 11:20 06/10/16 11:20 06/10/16 11:20 06/10/16 11:20 06/10/16 11:20 06/10/16 11:20	06/10/16 15:17 06/10/16 15:17 06/10/16 15:17 06/10/16 15:17 06/10/16 15:17 06/10/16 15:17 06/10/16 15:17	7 7440-38-2 7 7440-43-9 7 7440-50-8 7 7439-92-1 7 7440-02-0 7 7782-49-2	
Гhallium Zinc	ND ND	ug/L ug/L	1.0 25.0	1 1		06/10/16 15:17 06/10/16 15:17		
245.1 Mercury	Analytical Met	•	5.1 Preparation Me	thod: EP	A 245.1			
Mercury	ND	ug/L	0.10	1	06/10/16 10:45	06/10/16 14:01	7439-97-6	
2540D TSS, Low-Level	Analytical Met	hod: SM 254	0D					
Fotal Suspended Solids	4.5	mg/L	1.0	1		06/10/16 12:04		
Hexavalent Chromium by IC	Analytical Met	hod: EPA 218	3.7					
Chromium, Hexavalent	ND	ug/L	3.0	3		06/10/16 12:19	18540-29-9	
350.1 Ammonia	Analytical Met	hod: EPA 350	0.1					
Nitrogen, Ammonia	ND	mg/L	0.20	1		06/10/16 12:19	7664-41-7	
1500 Chloride	Analytical Met	hod: SM 450	0-CI-E					
Chloride	18.5	mg/L	5.0	1		06/10/16 14:49		



Project: Bremo Weekly Process

Pace Project No.: 92300811

QC Batch: GCSV/25221 Analysis Method: EPA 1664B

QC Batch Method: EPA 1664B Analysis Description: 1664 HEM, Oil and Grease

Associated Lab Samples: 92300811001

METHOD BLANK: 1752850 Matrix: Water

Associated Lab Samples: 92300811001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Oil and Grease mg/L ND 5.0 06/10/16 08:28

LABORATORY CONTROL SAMPLE: 1752851

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Oil and Grease mg/L 40 35.2 88 78-114

MATRIX SPIKE SAMPLE: 1752852

Date: 06/10/2016 05:55 PM

92300529001 Spike MS MS % Rec Parameter Units Result Conc. Result % Rec Limits Qualifiers ND Oil and Grease 40 35.8 90 78-114 mg/L



Project: Bremo Weekly Process

Pace Project No.: 92300811

Date: 06/10/2016 05:55 PM

QC Batch: MERP/9578 Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury

Associated Lab Samples: 92300811001

METHOD BLANK: 1753069 Matrix: Water

Associated Lab Samples: 92300811001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Mercury ug/L ND 0.10 06/10/16 13:56

LABORATORY CONTROL SAMPLE: 1753070

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 2.5 2.5 100 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1753071 1753072

MS MSD

92300811001 Spike Spike MS MSD MS MSD % Rec

Parameter Units Result Conc Conc Result Result % Rec % Rec Limits RPD Qual

Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual ug/L ND 2.5 2.4 70-130 2 Mercury 2.5 2.4 95 97

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92300811

Date: 06/10/2016 05:55 PM

QC Batch: MPRP/30964 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET

Associated Lab Samples: 92300811001

METHOD BLANK: 1602001 Matrix: Water

Associated Lab Samples: 92300811001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Tot Hardness asCaCO3 (SM 2340B ug/L ND 3300 06/10/16 15:07

LABORATORY CONTROL SAMPLE: 1602002

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Tot Hardness asCaCO3 (SM 2340B ug/L 165000 152000 92 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1602003 1602004

MS MSD

92300811001 Spike Spike MS MSD MS MSD % Rec

Parameter Paramet

Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Tot Hardness asCaCO3 (SM 74200 165000 232000 70-130 2 ug/L 165000 227000 95 92 2340B

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92300811

QC Batch: MPRP/30965 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 92300811001

METHOD BLANK: 1602013 Matrix: Water

Associated Lab Samples: 92300811001

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	06/10/16 15:03	
Arsenic	ug/L	ND	5.0	06/10/16 15:03	
Cadmium	ug/L	ND	1.0	06/10/16 15:03	
Copper	ug/L	ND	5.0	06/10/16 15:03	
Lead	ug/L	ND	5.0	06/10/16 15:03	
Nickel	ug/L	ND	5.0	06/10/16 15:03	
Selenium	ug/L	ND	5.0	06/10/16 15:03	
Silver	ug/L	ND	0.40	06/10/16 15:03	
Thallium	ug/L	ND	1.0	06/10/16 15:03	
Zinc	ug/L	ND	25.0	06/10/16 15:03	

LABORATORY CONTROL SAMPLE: 1602	014
---------------------------------	-----

Date: 06/10/2016 05:55 PM

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L		144	96	85-115	
•	•					
Arsenic	ug/L	100	100	100	85-115	
Cadmium	ug/L	10	9.8	98	85-115	
Copper	ug/L	50	49.3	99	85-115	
Lead	ug/L	100	101	101	85-115	
Nickel	ug/L	50	48.6	97	85-115	
Selenium	ug/L	150	152	101	85-115	
Silver	ug/L	50	49.1	98	85-115	
Thallium	ug/L	150	154	103	85-115	
Zinc	ug/L	200	204	102	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICAT	E: 16020	15		1602016						
			MS	MSD							
	923	300811001	311001 Spike		MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Antimony	ug/L	5.2	750	750	809	797	107	106	70-130	1 E	
Arsenic	ug/L	66.9	500	500	548	550	96	97	70-130	0 E	
Cadmium	ug/L	ND	50	50	50.4	50.0	101	100	70-130	1 E	
Copper	ug/L	ND	250	250	241	241	96	96	70-130	0	
Lead	ug/L	ND	500	500	512	509	102	102	70-130	1 E	
Nickel	ug/L	ND	250	250	243	242	96	96	70-130	0	
Selenium	ug/L	ND	750	750	695	699	92	93	70-130	1 E	
Silver	ug/L	ND	250	250	261	257	104	103	70-130	1 E	
Thallium	ug/L	ND	750	750	744	737	99	98	70-130	1 E	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92300811

Date: 06/10/2016 05:55 PM

Zinc

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1602015 1602016

MS MSD

92300811001 Spike Spike MS MSD MS MSD % Rec Parameter Units RPD Result Conc. Conc. Result Result % Rec % Rec Limits Qual ND 1000 94 70-130 ug/L 1000 946 947 0



Project: Bremo Weekly Process

Pace Project No.: 92300811

QC Batch: WET/45448 Analysis Method: SM 2540D

QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 92300811001

METHOD BLANK: 1753091 Matrix: Water

Associated Lab Samples: 92300811001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Total Suspended Solids mg/L ND 1.0 06/10/16 12:04

LABORATORY CONTROL SAMPLE: 1753092

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Suspended Solids** mg/L 250 244 98 90-110

SAMPLE DUPLICATE: 1753093

Date: 06/10/2016 05:55 PM

Parameter Units Parameter Units Parameter Units Parameter Parameter Units Parameter Result Result RPD Qualifiers Total Suspended Solids mg/L 4.5 4.7 4



Project: Bremo Weekly Process

Pace Project No.: 92300811

Date: 06/10/2016 05:55 PM

QC Batch: WETA/58597 Analysis Method: EPA 218.7

QC Batch Method: EPA 218.7 Analysis Description: Chromium, Hexavalent IC

Associated Lab Samples: 92300811001

METHOD BLANK: 1602389 Matrix: Water

Associated Lab Samples: 92300811001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Chromium, Hexavalent ug/L ND 1.0 06/10/16 11:53

LABORATORY CONTROL SAMPLE: 1602390

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chromium, Hexavalent ug/L .075 .076J 101 85-115

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1602391 1602392

MS MSD 92300811001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Chromium, Hexavalent ug/L ND .22 .22 .69J 85-115 .68J 95 87 3



Project: Bremo Weekly Process

Pace Project No.: 92300811

Date: 06/10/2016 05:55 PM

QC Batch: WETA/27912 Analysis Method: EPA 350.1

QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia

Associated Lab Samples: 92300811001

METHOD BLANK: 1753197 Matrix: Water

Associated Lab Samples: 92300811001

ParameterUnitsBlank Reporting ResultReporting LimitAnalyzedQualifiersNitrogen, Ammoniamg/LND0.2006/10/16 12:16

LABORATORY CONTROL SAMPLE: 1753198

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Nitrogen, Ammonia mg/L 5.2 104 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1753199 1753200

MS MSD 92300811001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Nitrogen, Ammonia ND 5 5 5.1 5.2 90-110 mg/L 103 103 0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



Project: Bremo Weekly Process

Pace Project No.: 92300811

Date: 06/10/2016 05:55 PM

QC Batch: WETA/27914 Analysis Method: SM 4500-CI-E
QC Batch Method: SM 4500-CI-E Analysis Description: 4500 Chloride

Associated Lab Samples: 92300811001

METHOD BLANK: 1753396 Matrix: Water

Associated Lab Samples: 92300811001

Blank Reporting
Parameter Units Result Limit Analyzed Qualifiers

Chloride mg/L ND 5.0 06/10/16 14:47

LABORATORY CONTROL SAMPLE: 1753397

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride mg/L 20 20.5 102 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1753398 1753399

MS MSD

92300811001 Spike Spike MS MSD MS MSD % Rec

Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual 18.5 90-110 Chloride mg/L 10 10 28.0 28.0 95 95 0



#### **QUALIFIERS**

Project: Bremo Weekly Process

Pace Project No.: 92300811

#### **DEFINITIONS**

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

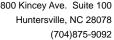
#### **LABORATORIES**

PASI-A Pace Analytical Services - Asheville
PASI-C Pace Analytical Services - Charlotte
PASI-O Pace Analytical Services - Ormond Beach

# **ANALYTE QUALIFIERS**

Date: 06/10/2016 05:55 PM

E Analyte concentration exceeded the calibration range. The reported result is estimated.





# **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: Bremo Weekly Process

Pace Project No.: 92300811

Date: 06/10/2016 05:55 PM

Lab ID	Sample ID  T3-160609-0930-S3  T3-160609-0930-S3  T3-160609-0930-S3  T3-160609-0930-S3  T3-160609-0930-S3  T3-160609-0930-S3	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92300811001	T3-160609-0930-S3		FLD/	-	
92300811001	T3-160609-0930-S3	EPA 1664B	GCSV/25221		
92300811001	T3-160609-0930-S3	EPA 200.7	MPRP/30964	EPA 200.7	ICP/18487
92300811001	T3-160609-0930-S3	Trivalent Chromium Calculation	ICP/18494		
92300811001	T3-160609-0930-S3	EPA 200.8	MPRP/30965	EPA 200.8	ICPM/12531
92300811001	T3-160609-0930-S3	EPA 245.1	MERP/9578	EPA 245.1	MERC/9206
92300811001	T3-160609-0930-S3	SM 2540D	WET/45448		
92300811001	T3-160609-0930-S3	EPA 218.7	WETA/58597		
92300811001	T3-160609-0930-S3	EPA 350.1	WETA/27912		
92300811001	T3-160609-0930-S3	SM 4500-CI-E	WETA/27914		

# ace Analytical`

# Document Name: Sample Condition Upon Receipt(SCUR)

Document No.: F-MEC-CS-009-Rev.03 Document Revised: May 24, 2016 Page 1 of 2

Issuing Authority: Pace Mechanicsville Quality Office

Page 2 of 2 for Internal Use ONLY

Sample Condition Upon WO#: 92300811 Client Name: Client Courier: Fed Ex Pace Other: Commercia ! Ves **V**Yes No ΠNO Custody Seal Present? Seals Intact? Date/Initials Person Examining Contents: 4-9-16 None Other:\_ Packing Material: Bubble Wrap Bubble Bags Thermometer: Samples on ice, cooling process has begun Wet Blue None RMD001 Type of Ice: Yes No Correction Factor: 0.0°C Biological Tissue Frozen? Cooler Temp Corrected (°C): Temp should be above freezing to 6°C USDA Regulated Soil ( N/A, water sample) Did samples originate from a foreign source (internationally, Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? including Hawaii and Puerto Rico)? Yes Yes No Comments/Discrepancy: Chain of Custody Present? Yes □No □N/A 1. Samples Arrived within Hold Time? Yes □No □N/A Short Hold Time Analysis (<72 hr.)? No □N/A 3. Rush Turn Around Time Requested? □No □N/A 4. Sufficient Volume? Yes No □N/A Correct Containers Used? No □N/A 6. Yes ☐ No □N/A -Pace Containers Used? Containers Intact? Yes No □N/A Samples Field Filtered? □No N/A Note if sediment is visible in the dissolved container Yes Sample Labels Match COC? Yes No □N/A 9. -Includes Date/Time/ID/Analysis Matrix: 10. HNC3 pH<2 All containers needing acid/base preservation have been checked? Yes No □N/A HCI pH<2 All containers needing preservation are found to be in compliance with EPA recommendation? H2SO4 pH<2 Yes (HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) □ No □N/A NaOH pH>12 Exceptions: VOA, Coliform, TOC, Oil and Grease, NaOH/ZnOAc pH>9 DRO/8015 (water) DOC,LLHg Yes □No □N/A M/A Samples checked for dechlorination? Yes □No 11. Headspace in VOA Vials (>5-6mm)? 12. Yes □No N/A N/A Trip Blank Present? Yes □No 13. MN/A Trip Blank Custody Seals Present? Yes No Pace Trip Blank Lot # (if purchased): Field Data Required? Yes No CLIENT NOTIFICATION/RESOLUTION Person Contacted: Date/Time: Comments/Sample Discrepancy: NM6 Project Manager SCURF Review: Project Manager SRF Review: Date: Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)

# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Pace Analytical

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			008	ADDITION												T3-160609-0930	SAMPLE ID  (A-Z, 0.9 / ,)  Sample IDs MUST BE UNIQUE	Section D Required Client Information		Requested Due Date/TAT:	804-551-0129		Richmond, VA 23227		ny: Golder Associates	Section A Required Client Information:
			12/19/2008	ADDITIONAL COMMENTS												9-0930-53				24 HOUR	Fax: 804-358-2900	Mormand@golder.com	VA 23227	2108 W Laburnum Ave, Ste 200	ociates	
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